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What is claimed is:

- 1 1. One or more plant cells comprising a polynucleotide that encodes a human  
2 acetylcholinesterase.
- 1 2. A tissue culture of regenerable cells derived from the plant cell of claim 1.
- 1 3. A transgenic plant, or a part thereof, derived from the plant cell of claim 1.
- 1 4. A seed derived from the plant of claim 3.
- 1 5. Pollen derived from the plant of claim 3.
- 1 6. The plant of claim 3, wherein said plant is capable of expressing a physiologically  
2 active human acetylcholinesterase in at least one tissue type of said plant.
- 1 7. The plant of claim 3, or a part thereof, wherein said plant is a tomato plant.
- 1 8. A method of making a transgenic plant that is capable of expressing a physiologically  
2 active human acetylcholinesterase, comprising the steps of:  
3 a) introducing into at least one plant cell a polynucleotide that encodes a  
4 human acetylcholinesterase; and  
5 b) regenerating from said plant cell a transgenic plant that is capable of  
6 expressing said physiologically active human acetylcholinesterase  
7 in at least one tissue type of said transgenic plant.
- 1 9. A method of making a physiologically active human acetylcholinesterase, comprising  
2 the steps of:  
3 a) introducing into at least one plant cell a polynucleotide that encodes a  
4 human acetylcholinesterase;  
5 b) regenerating from said plant cell a transgenic plant that is capable of  
6 expressing said physiologically active human acetylcholinesterase  
7 in at least one tissue type of said transgenic plant; and

8 c) isolating or purifying from said transgenic plant or a part thereof said  
9 physiologically active human acetylcholinesterase.

1 10. A method of treating a victim of acetylcholinesterase poisoning, comprising the step  
2 of administering a therapeutic amount of a physiologically active human  
3 acetylcholinesterase expressed in plant tissue.

1 11. An isolated polynucleotide comprising a nucleic acid molecule including a sequence  
2 selected from the group consisting of:

3 a) SEQ ID NO:1;

4 b) SEQ ID NO:2;

5 c) SEQ ID NO:3;

6 d) SEQ ID NO:4; and

7 e) SEQ ID NO:5..

1 12. A transformed cell comprising the polynucleotide of claim 11.

1 13. A synthetic polynucleotide comprising a nucleic acid molecule that encodes a human  
2 acetylcholinesterase.

1 14. A transformed cell comprising the polynucleotide of claim 13.

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